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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/445,033	01/18/2000	MARK SIEVERT LARSEN	CU-2048TJK	9384

7590 10/24/2002

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EXAMINER
PARTON, KEVIN S

ART UNIT	PAPER NUMBER
2153	

DATE MAILED: 10/24/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/445,033	LARSEN ET AL.	
	Examiner	Art Unit	
	Kevin Parton	2153	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,13-16 and 30* is/are rejected.

7)☒ Claim(s) *8-12 and 17-29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 March 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *8* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Specification

1. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

3. Claims 8, 9, 12, 17, 18, 22, 25, and 27 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from another multiple dependent claim (directly or indirectly). See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

4. Claims 10, 11, 19, 20, 21, 23, 24, 26, 28, and 29 are objected to under 37 CFR 1.75(c) as being in improper form because they are dependent upon the improper multiple dependent claims listed above. Accordingly, the claims have not been further treated on the merits.

Drawings

5. The drawings are objected to because in figures 2 and 3, no reference numbers or characters are used to refer to the aspects of the drawings. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-5, 13, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Sugihara (USPN 4,930,118).

8. Regarding claims 1 and 30, Sugihara (USPN 4,930,118) teaches a communication network comprising a plurality of stations each able to transmit and receive data so that the network can transmit data from an originating station to a destination station via at least one intermediate station, the method comprising:

a. Defining at least one calling channel (column 3, lines 4-8; column 3, lines 13-14). Note that a communication channel must be selected to send the frame sync in the reference. The frame sync is the same as a probe signal.

b. Selecting, at each station and according to first predetermined criteria, a calling channel for the transmission of probe signals to other stations (column 3, lines 4-8)

c. Transmitting probe signals from each station on the selected calling channel, other stations which receive the probe signals from a given station responding directly or indirectly to thereby indicate to the given station their availability as destination or intermediate stations (column 3, lines 4-13; column 4, lines

3-6, 13-14, 22-25). Note that in response to a polling signal, the stations send identification information.

d. Evaluating, at the given station, the direct or indirect responses of other stations to the probe signals according to second predetermined criteria, in order to identify other stations with which the given station can communicate optimally (column 5, lines 14-21). Note that the testing of the power of the return signals tests the communication lines and the terminal station operation.

9. Regarding claim 2, Sugihara (USPN 4,930,118) teaches all the limitations as applied to claim 1. He further teaches means wherein the other stations receiving the probe signals from the given station each modify their own probe signals to include data indicating the quality of the communication between the given station and themselves, the given station being responsive to the data to vary at least one parameter of its transmissions so that it can communicate optimally with a desired number of other stations in the network without causing undue contention or interference between stations (column 5, lines 14-22; column 2, lines 14-22). Please note that in response to the determination of a network node operating abnormally, the switch will change the channel on which information is passed and send a signal to the central node. This signal is the equivalent to a 'probe signal' from the reference.

10. Regarding claim 3, Sugihara (USPN 4,930,118) teaches all the limitations as applied to claim 1 or 2. He further teaches means wherein the probe signals from the given station include data identifying other stations which the given station has detected as being available as destination or intermediate stations (column 5, lines 14-22). Note that in the reference, when the

switch notes a terminal as performing abnormally, it informs the central device and changes the channel for communication.

11. Regarding claim 4, Sugihara (USPN 4,930,118) teaches all the limitations as applied to claim 3. He further teaches means wherein the probe signals further include data indicating the quality of the communication between the given station and each other identified station (column 4, lines 22-25; column 5, lines 14-22). Note that in the reference, the return probes from the tested stations include information about their identification as well as the strength of the signal, which encompasses the quality of the communication.

12. Regarding claim 5, Sugihara (USPN 4,930,118) teaches all the limitations as applied to claim 4. He further teaches means wherein the probe signals are broadcast probe signals addressed to all or a plurality of the other stations (abstract; column 3, lines 4-7). Note that all stations are polled from the central station. Also the frame sync is sent to al stations from the central station.

13. Regarding claim 13, Sugihara (USPN 4,930,118) teaches all the limitations as applied to claim 1. He further teaches means wherein stations receiving probe signals from the given station respond by transmitting reply signals to the given station, the given station comparing the number of reply signals received from different stations with a predetermined value, and varying at least one parameter of its transmission if the number of reply signals does not correspond to the second value until the number of reply signals received by the given station corresponds to the predetermined value (column 5, lines 14-22). Note that in the reference, the central machine or switch waits for replies from all the terminals. If replies are not sufficient, the channel is referred to as operating abnormally and the switch uses a different channel.

14. Claims 1 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Sweazey (USPN 5,485,578).

15. Regarding claims 1 and 30, Sweazey (USPN 5,485,578) teaches a communication network comprising a plurality of stations each able to transmit and receive data so that the network can transmit data from an originating station to a destination station via at least one intermediate station, the method comprising:

a. Defining at least one calling channel (figure 3; figure 4). Note that a communication channel must be selected to send the initial packet.

b. Selecting, at each station and according to first predetermined criteria, a calling channel for the transmission of probe signals to other stations (figure 3; figure 4; column 15, lines 10-14)

c. Transmitting probe signals from each station on the selected calling channel, other stations which receive the probe signals from a given station responding directly or indirectly to thereby indicate to the given station their availability as destination or intermediate stations (column 15, lines 13-16; column 15, lines 30-36). Note that the target stations can send back any type of information.

d. Evaluating, at the given station, the direct or indirect responses of other stations to the probe signals according to second predetermined criteria, in order to identify other stations with which the given station can communicate optimally (column 15, lines 30-36). Note that in the reference, any node can

determine the status and topology of the network by sending out the probe signals and evaluating the responses.

Claim Rejections - 35 USC § 103

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

17. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugihara (USPN 4,930,118) in view of Sweazey (USPN 5,485,578).

18. Regarding claim 6, although the system disclosed by Sugihara (USPN 4,930,118) (as applied to claim 5) shows substantial features of the claimed invention, it fails to disclose means wherein the probe signals additionally include addressed probe signals, addressed to at least one other station with which the station transmitting the addressed probe signals wishes to communicate.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Sugihara (USPN 4,930,118), as evidenced by Sweazey (USPN 5,485,578).

In an analogous art, Sweazey (USPN 5,485,578) discloses a system for topology discovery comprising means wherein the probe signals additionally include addressed probe signals, addressed to at least one other station with which the station transmitting the addressed probe signals wishes to communicate (abstract; column 4, lines 17-19). Note that in the reference, the ping signals are addressed to specific nodes in the network.

Given the teaching of Sweazey (USPN 5,485,578), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Sugihara (USPN 4,930,118) by employing the use of addressed probe signals in addition to broadcast probe signals. This benefits the system by providing information about a specific node when communication to that node is necessary. It is a quality update for the communication integrity that is more reliable than the periodically updated broadcast type.

19. Regarding claim 7, although the system disclosed by Sugihara (USPN 4,930,118) (as applied to claim 6) shows substantial features of the claimed invention, it fails to disclose means wherein the addressed probe signals are transmitted more frequently than the broadcast probe signals.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Sugihara (USPN 4,930,118), as evidenced by Sweazey (USPN 5,485,578).

In an analogous art, Sweazey (USPN 5,485,578) discloses a system for topology discovery comprising means wherein the addressed probe signals are transmitted more frequently than the broadcast probe signals (abstract; column 4, lines 17-19). Note that in the reference, the addressed signals are sent for all topology discovery. It logically follows that since data is constantly moving around a network, the addressed probes would be required more often than the broadcast probes. This allows the system to update the quality of a link before sending data thus decreasing the probability of signal degradation.

20. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugihara (USPN 4,930,118) in view of Bentall et al. (USPN 6,282,170).

21. Regarding claim 14, Sugihara (USPN 4,930,118) teaches all the limitations as applied to claim 13. He further teaches means including selecting a different calling channel if the number of reply signals does not correspond to the predetermined value (column 5, lines 14-22).

Although the system disclosed by Sugihara (USPN 4,930,118) shows substantial features of the claimed invention, it fails to disclose means including defining a plurality of calling channels, each calling channel except the first having a higher data rate than a previous calling channel and selecting according to the second predetermined criteria.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Sugihara (USPN 4,930,118), as evidenced by Bentall et al. (USPN 6,282,170).

In an analogous art, Bentall et al. (USPN 6,282,170) discloses a system for network recovery and route selection with means for defining a plurality of calling channels, each calling channel except the first having a higher data rate than a previous calling channel and selecting according to the second predetermined criteria (figure 4). Note that in the reference, multiple alternate routes are selected with highest possible calling capacities. These are then selected according to a criterion.

Given the teaching of Bentall et al. (USPN 6,282,170), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Sugihara (USPN 4,930,118) by employing the use of additional channels to the terminals and selection between them based on the best possible route. This allows the system to quickly and automatically respond to link failure and to recover to an optimized system.

22. Regarding claim 15, although the system disclosed by Sugihara (USPN 4,930,118) (as applied to claim 14) shows substantial features of the claimed invention, it fails to disclose means wherein the first predetermined criteria include the calling channel data rate and/or the calling channel transmission power, the calling channel being selected according to the highest available channel data rate and/or the lowest available channel transmission power.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Sugihara (USPN 4,930,118), as evidenced by Bentall et al. (USPN 6,282,170).

In an analogous art, Bentall et al. (USPN 6,282,170) discloses a system for network recovery and route selection with means wherein the first predetermined criteria include the calling channel data rate and/or the calling channel transmission power, the calling channel being selected according to the highest available channel data rate and/or the lowest available channel transmission power (figure 4). Note that in the reference, the channels are selected according to a number of criteria including link cost and capacity.

Given the teaching of Bentall et al. (USPN 6,282,170), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Sugihara (USPN 4,930,118) by employing link capacity and power in the determination of the link performance. These are common attributes for selecting the best communication links and are applied here for that reason. By minimizing power, the overall power consumption of the system is decreased. By maximizing channel capacity, the speed of the signal can be increased. Both of these lead to a more optimized system.

23. Regarding claim 16, although the system disclosed by Sugihara (USPN 4,930,118) (as applied to claims 14 or 15) shows substantial features of the claimed invention, it fails to disclose means wherein the second predetermined criteria include the calling channel data rate and/or the calling channel transmission power, the different calling channel being selected to have an incrementally lower channel data rate and/or an incrementally higher channel transmission power.

Nonetheless, these features are well known in the art and would have been an obvious modification of the system disclosed by Sugihara (USPN 4,930,118), as evidenced by Bentall et al. (USPN 6,282,170).

In an analogous art, Bentall et al. (USPN 6,282,170) discloses a system for network recovery and route selection with means wherein the second predetermined criteria include the calling channel data rate and/or the calling channel transmission power, the different calling channel being selected to have an incrementally lower channel data rate and/or an incrementally higher channel transmission power (figure 4). Note that in the reference, the channels are selected according to a number of criteria including link cost and capacity.

Given the teaching of Bentall et al. (USPN 6,282,170), a person having ordinary skill in the art would have readily recognized the desirability and advantages of modifying Sugihara (USPN 4,930,118) by employing link capacity and power in the determination of the link performance. These are common attributes for selecting the best communication links and are applied here for that reason. By maximizing power, the reliability of message receipt is increased. By minimizing channel capacity, least amount of bandwidth can be used depending on the priority of the signal. Both of these can lead to a more optimized system.

Conclusion

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Please see the following:

a. Zeldin (USPN 5,793,975) – System for topology change detection and neighbor determination.

b. Maegawa (USPN 6,335,919) – System for network management with network topology discovery.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Parton whose telephone number is (703)306-0543. The examiner can normally be reached on M-F 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess can be reached on (703)305-4792. The fax phone numbers for the organization where this application or proceeding is assigned are (703)746-9242 for regular communications and (703)746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

Kevin Parton
Examiner
Art Unit 2153

ksp
October 17, 2002

MOUSTAFA M. MEKY
PRIMARY EXAMINER